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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,361	04/12/2004	Ilya Karpov	ITL0835D1US (P14730D)	3077
21906 7590 08/15/2007 TROP PRUNER & HU, PC 1616 S. VOSS ROAD, SUITE 750 HOUSTON, TX 77057-2631				
EXAMINER				
PHAM, LONG				
ART UNIT		PAPER NUMBER		
2814				
MAIL DATE		DELIVERY MODE		
08/15/2007		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/822,361

## Applicant(s)

KARPOV ET AL.

## Examiner

Long Pham

## Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 10, 11, 18-23 and 26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10, 11, 18-23 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 26 recites the limitation "said trench" in line 3. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10, 18, 20, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Sheng et al. (US pat 590454).

With respect to claim 10, Sheng et al. teach an integrated circuit comprising (see figs. 2A-2D and associated text):

A semiconductor structure 100, 102, 104;

A first trench 106 formed on a first depth in said semiconductor structure;

A covering 114 on said first trench and over the semiconductor structure, said covering being thicker along a center line of said first trench than over said semiconductor structure; and

Said covering having an opening 116 through said covering, said opening to define a region for a second trench 116 extending cross (into the page) and perpendicular to a length or width of said first trench.

With respect to claim 18, Sheng et al. further teach said second trench is shallower than said first trench. See figs. 2A and 2C.

With respect to claim 20, Sheng et al. further teach said covering in the said first trench has an upstanding portion that extends beyond a bottom surface of said trench. See top part of 114a in fig. 2C.

With respect to claim 26, Sheng et al. further teach said thinner portion of said covering is over said semiconductor structure other than over said semiconductor structure in said trench.

Claims 21, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Sheng et al. (US pat 590454).

With respect to claim 10, Sheng et al. teach an integrated circuit comprising (see figs. 2A-2D and associated text):

A semiconductor structure 100, 102, 104;

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A first 106 and a second 116 trench formed in said semiconductor structure, said first trench formed to a first trench, said second trench extending cross (into the page) and perpendicular to a length or width of said first trench and formed to a second depth less than said first depth; and

A covering 114 in said first trench and over said semiconductor structure, said covering having an opening therethrough, said opening in communication with said second trench, wherein a thinner portion of said covering that is over said semiconductor structure is thinner than a thicker portion of said covering along a center line of said first trench, said thinner portion of said covering other than in said first and second trench, said covering in said first trench being thicker away from said center line than along said center line.

With respect to claim 22, Sheng et al. further teach the covering partially fills said first trench.

With respect to claim 23, Sheng et al. further teach the covering in said first trench includes an upstanding portion (top portion of 114a) at the intersection of said first and second trenches, the upstanding portion extending above a bottom surface of said second trench to an upper surface of said substrate.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheng et al. (US pat 590454).

With respect to claim 11, Sheng et al. fail to teach that the covering is made of spin-on-glass material.

However, the use of spin-on-glass as covering material is well-known in the art.

With respect to claim 19, Sheng et al. further teach that an opening is formed through the covering and is used as mask to define an opening for forming a second trench but fail to teach the opening is formed such that opening does not extend all the way through covering.

However, It would have been obvious to one of ordinary skill in the art of making semiconductor devices to form an opening in the covering such the a thin portion of the covering is remained over the substrate in the opening so as to provide buffering or protection for substrate during the formation or etching of the second trench.

***Response to Arguments***

Applicant's arguments with respect to claims 10-11, 18-23 and 26 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long Pham whose telephone number is 571-272-1714. The examiner can normally be reached on Mon-Frid, 10am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Long Pham/  
Primary Examiner, Art Unit 2814

/L. P./